

IV&V of Design Against Requirements

“Ensure that all (in-scope) requirements (e.g. SRS and IRS) are represented in the appropriate elements of the design (e.g. SDD and IDD) and that the design does not introduce capability that is not required.”

Source: IVV 09-1, Revision L, January 27, 2011

Completeness

- Identify requirements mapping to design elements in the model
- Identify requirements mapping to other requirements
- Add additional mappings where necessary
- Run design/requirement coverage reports
 - Requirements not addressed by design
 - Design that has no requirements

Accuracy

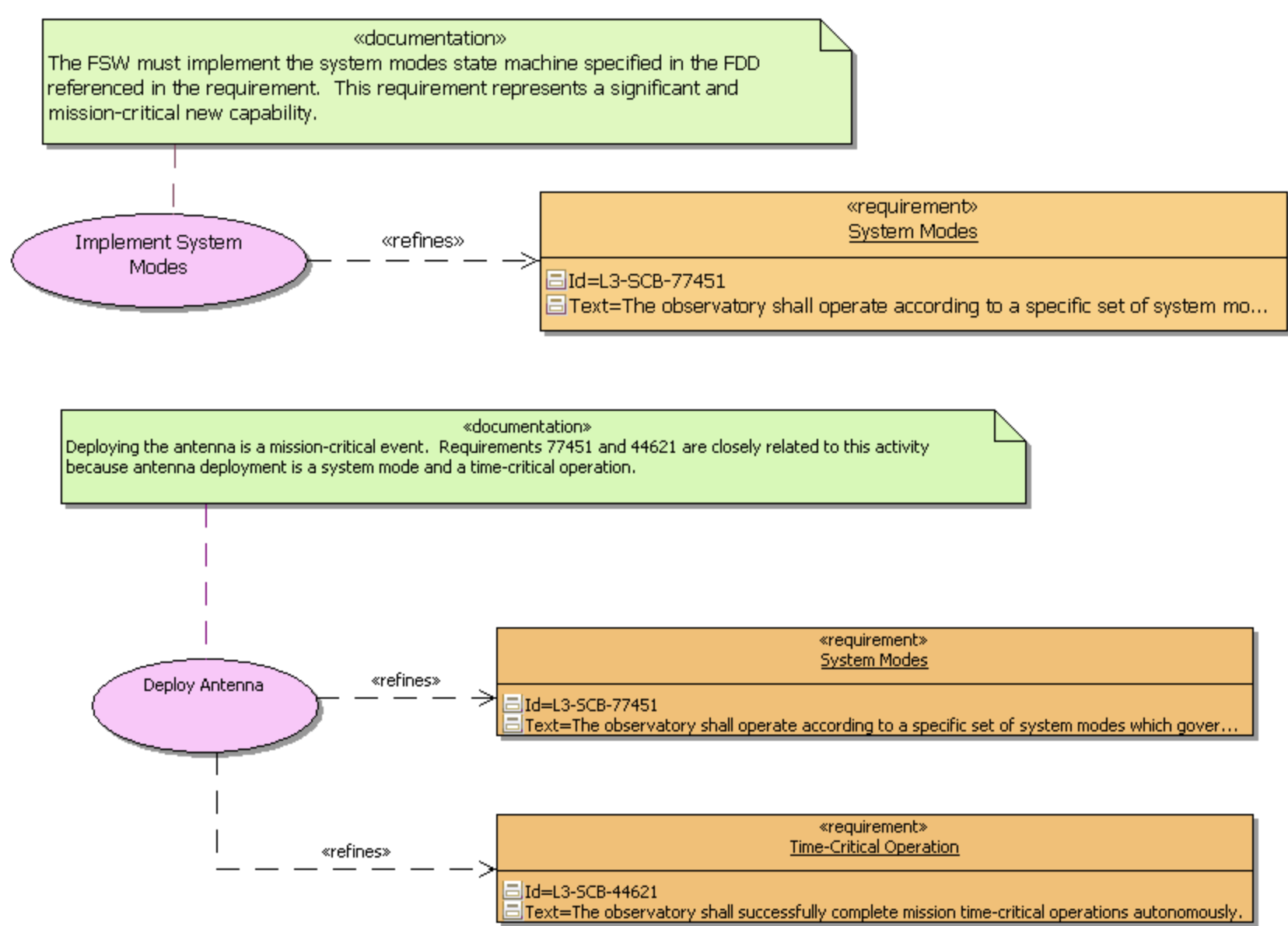
- Does IV&V believe that the design represents the attached requirements.
- If requirements are partially or inaccurately reflected in the design, enter them in the appropriate assessment database for the project.

Correctness

- Review design to requirements coverage to assess that the requirements are correct for the design.



Source: www.nasa.gov



Figures 1a&b: Graphical Design Requirement Mapping

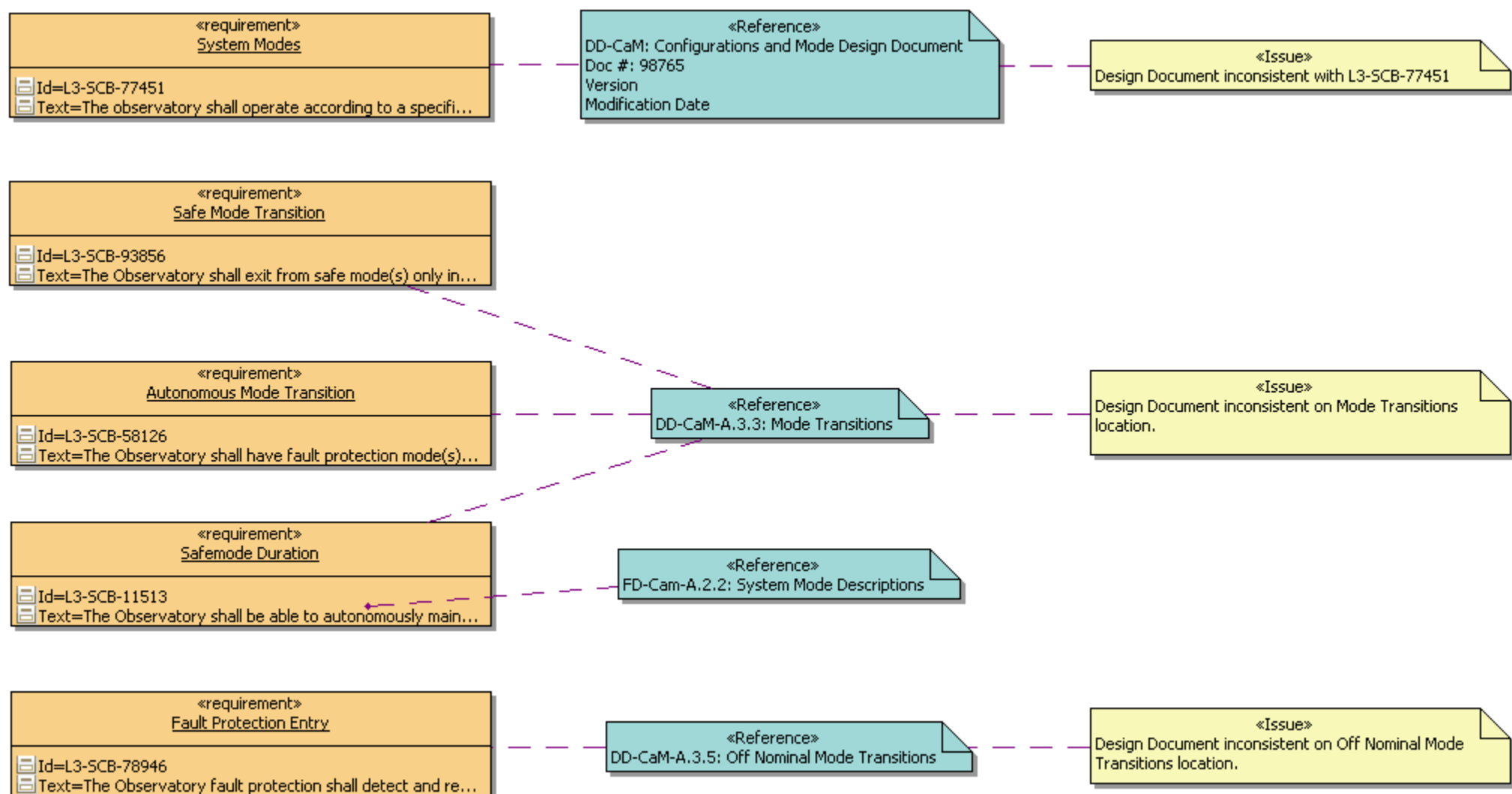


Figure 2: FDD Requirement Mapping

How IV&V Validates Design against Requirements

- The design must be analyzed to ensure that it fulfills the validated requirements as expected.
- Need to utilize the Functional Description Documents (FDDs) to form basis of understanding of the intended capability/ functionality that the model must satisfy.
- Perform an assessment of the adherence to project defined standards, rules, and guidelines for model development.
- Run simulation scenarios against the model to assess operation under nominal and off nominal conditions and detect the introduction of unintended features.

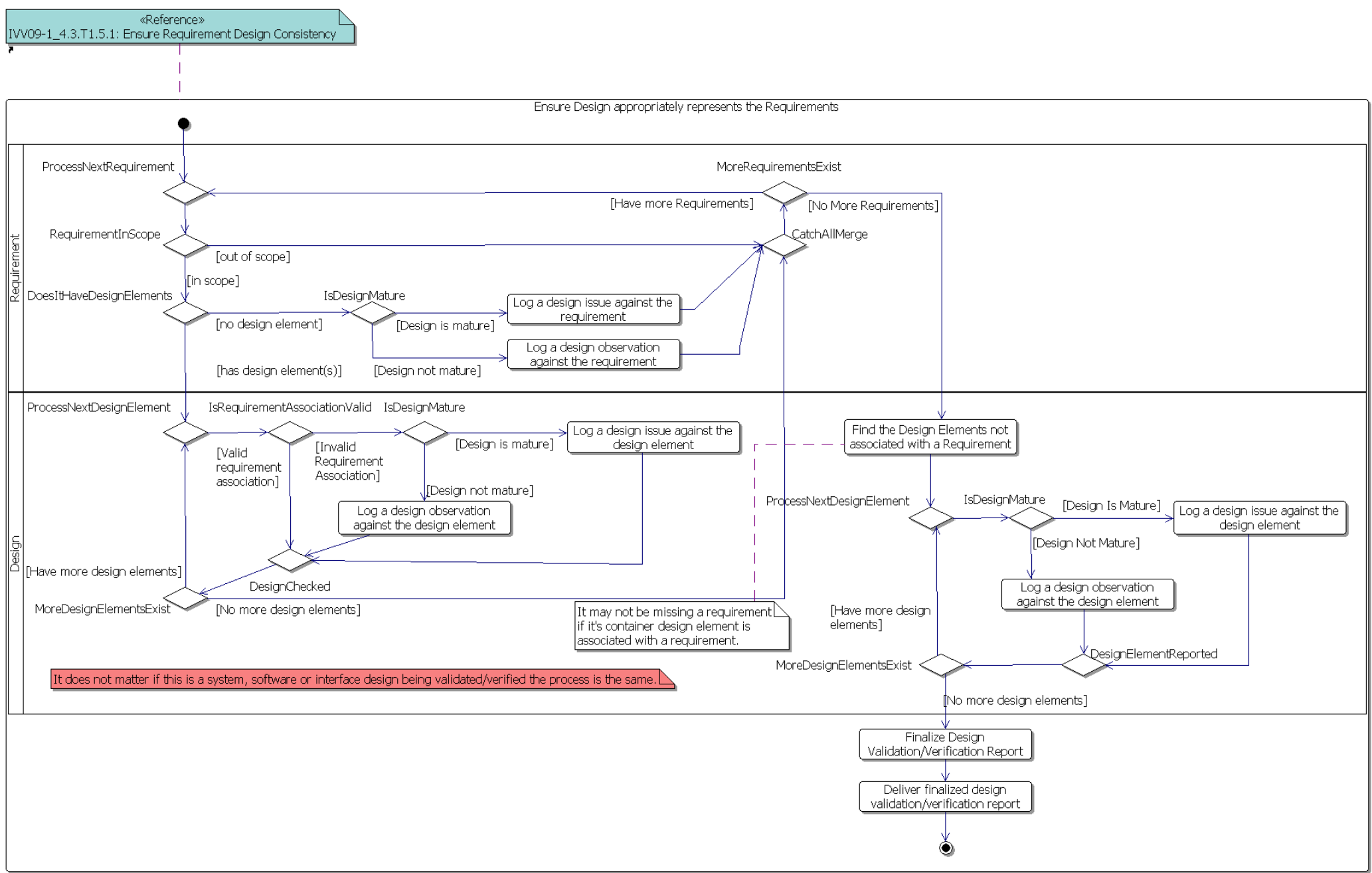


Figure 3: Ensure Design Represents Requirements

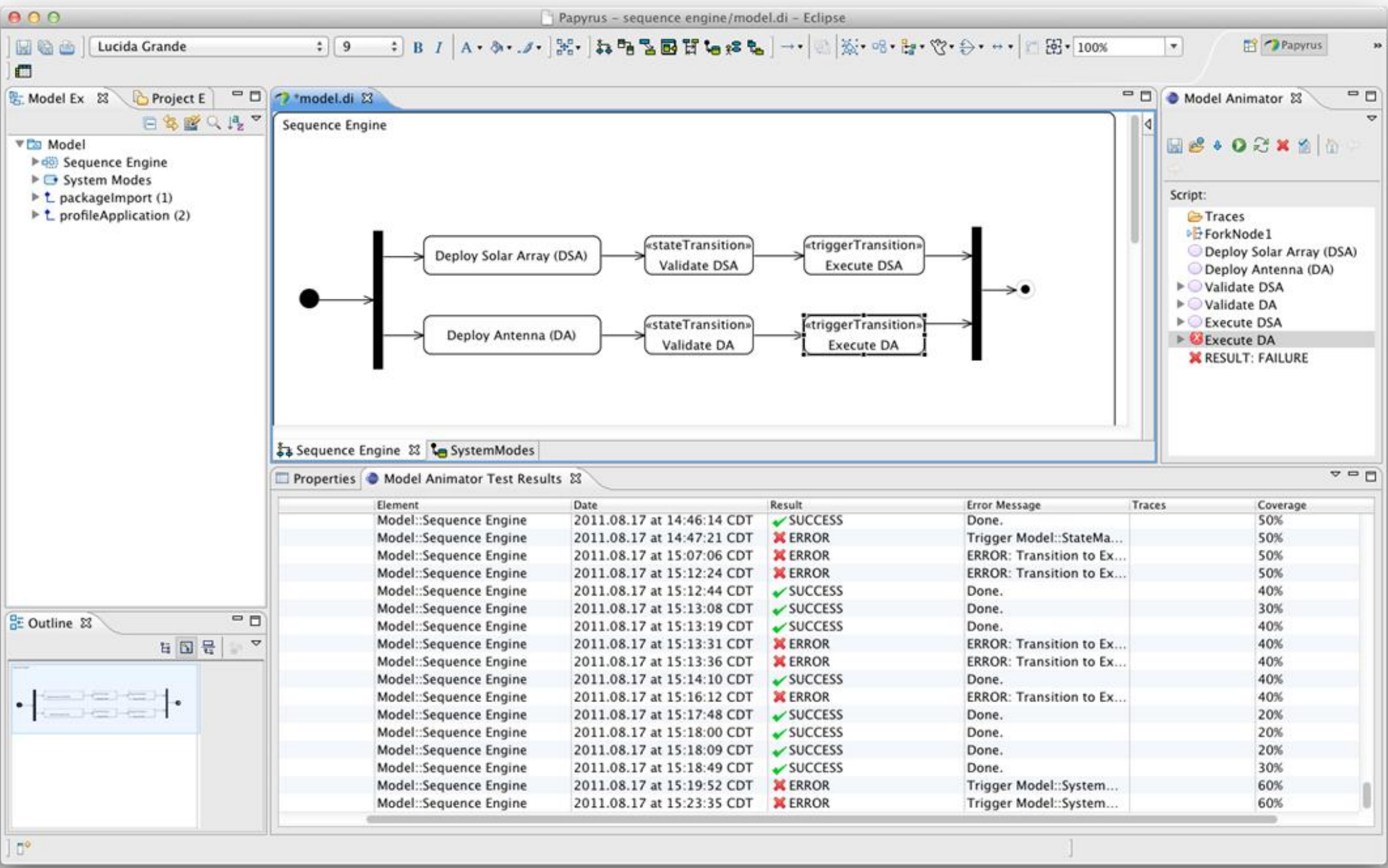


Figure 5: Simulation Scenarios and Results

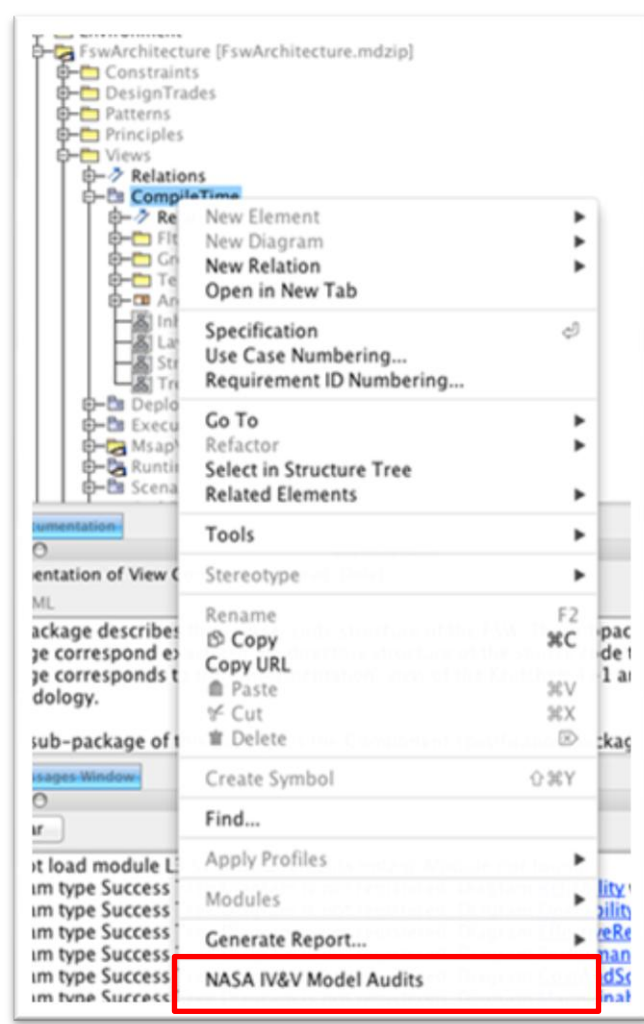


Figure 4: Model Audits for Standard Compliance

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